



August 15, 2024

Mr. Gregory Rondeau, Chairman
355 East Central Street
Franklin, MA 02038

**Re: Nylah Crossing LLC, 240 East Central Street & 9 Lewis Street
Site Plan Peer Review Update**

Dear Mr. Rondeau:

BETA Group, Inc. is pleased to provide engineering peer review services for the proposed project entitled **"Site Plan Review 240 East Central Street & 9 Lewis Street"** located at 240 East Central Street in Franklin, Massachusetts. This letter is provided to update BETA's findings, comments, and recommendations.

Basis of Review

The following documents were received by BETA and will form the basis of the review:

- Plans (17 sheets) entitled: **"Nylah Crossing LLC, Site Plan Review, 240 E Central St & 9 Lewis Street, Franklin MA"**, dated May 23, 2024, revised 08-07-2024, prepared by MP Design Consultants Inc. of Southborough, MA stamped by Carlos Ferrera, MA PE #4143.
- Stormwater Management Report prepared for Nylah Crossing LLC dated May 23, 2024, revised August 07, 2024, prepared by MP Design Consultants Inc. of Southborough, MA stamped by Carlos Ferreira, MA PE #41426.
- Letter addressed to the Franklin Planning Board from MP Design Consultants, **re: Nylah Crossing LLC, 240 East Central Street & Lewis Street, Site Plan Peer Review**, dated August 07, 2024.

Review by BETA included the above items along with the following, as applicable:

- Site Visit
- **Zoning Chapter 185 From the Code of the Town of Franklin**, current through July 2021
- **Zoning Map of the Town of Franklin, Massachusetts**, attested to October 7, 2020
- **Stormwater Management Chapter 153 From the Code of the Town of Franklin**, Adopted May 2, 2007
- **Subdivision Regulations Chapter 300 From the Code of the Town of Franklin**, current through March 8, 2021
- **Wetlands Protection Chapter 181 From the Code of the Town of Franklin**, dated August 20, 1997
- **Town of Franklin Best Development Practices Guidebook**, dated September 2016

1.0 SITE AND PROJECT DESCRIPTION

The project site includes two lots identified as Assessors Map 285 Parcels 66 and 68, with a total area of 34,500± square feet located at 240 East Central Street and 9 Lewis Street in the Town of Franklin (the “Site”). The Site is located within the Commercial 1 zoning district. The adjacent lot to the west is Taj Estates, a recently permitted multi-family housing development at 230 East Central Street. The 2 single family dwellings to the east along Lewis Street are also located in the Commercial 1 zoning district. The lots to the south are in the Single-Family IV zoning district with a single-family dwelling at 29 Lewis Street located just off the southeast corner of the parcel. The Site is located within the limits of the Water Resource District.

The existing Site is the location of two single-family residential dwellings at 240 East Central Street and 9 Lewis Street. The 240 East Central property was formerly used as a daycare facility. The proposed development is to combine the lots and raze the existing structures to construct two buildings, Building “A” and Building “B” located on the eastern and western sides of the Site, respectively. Building A will be a multi-story, mixed-use structure with a footprint area of 5,940± sq. ft. that will provide 6 housing units. Building B will be a multi-story, mixed-use structure with a footprint area of 8,326± sq. ft. that will provide 8 housing units and 406 square feet of commercial use on the first floor.

Access to the Site is proposed via a new one-way driveway beginning at East Central Street at the north side of the Site, continuing south between the two buildings, then ending at Lewis Street in the southeast corner of the Site. Associated Site features include curbing, sidewalk, landscaping, parking areas, residential garages, fencing, and utilities (water, sanitary sewer, gas, electric). Stormwater management is proposed via a new closed drainage system consisting of catch basins and manholes which will convey stormwater runoff to one large subsurface infiltration system and four smaller subsurface infiltration systems.

No wetland resource areas are located within or in the vicinity of the Site. The Site is not located in a FEMA mapped 100-year floodplain or an NHESP-mapped estimated habitat of rare or endangered species. The project is in the Water Resource District which is the Zone II of a public water supply well. NRCS soil maps indicate that underlying soils are Sudbury fine sandy loam with a hydrologic soil group rating (HSGR) of B (moderate infiltration potential) or urban land with no assigned HSGR.

To assist with the review, all previous comments that have been addressed will be removed from discussion. The MP Design Consultant response to the BETA 4th review will be identified as “MPD4:”. The BETA response will be identified as “**BETA5:**” and any outstanding comments from prior reviews that have been deferred to the Board will continue to be noted as bold letters.

2.0 WAIVERS

No waiver requests are noted in the submission.

4.0 GENERAL REVIEW COMMENTS

The project is subject to the Town of Franklin zoning regulations outlined under Chapter 185. Review comments related to the zoning bylaw are provided in the following sections.

The project proposes a Mixed Use consisting of commercial and residential uses and is located within the Commercial I (CI) district. Both proposed buildings have greater than 3 housing units.

Multifamily or apartment residential uses with four or more housing units are permitted in the CI district subject to the requirement that lot area must be at least 25% greater than that required for a single-family dwelling and no more than one dwelling unit per 2,250 Sq. Ft. of lot area is permitted. The project will meet both of these requirements.

Certain types of commercial uses are allowed in the CI district; several categories of commercial uses are not allowed or require a special permit.

Z1. Clarify the nature of the proposed commercial uses and confirm it will be a permitted use.

MPD: This property is zoned as Commercial I and in accordance with the town of Franklin's bylaw Chapter 185 - Zoning Attachment 8 the accessory use of Professional Office, Studio is deemed a permitted use.

BETA2: Information provided. BETA defers to the Board to determine if any conditions or restrictions are required to ensure the proposed commercial use remains as a permitted use in the future.

SCHEDULE OF LOT, AREA, FRONTAGE, YARD AND HEIGHT REQUIREMENTS (§185 ATTACHMENT 9)

The project will comply with dimensional requirements for lot area, frontage, lot width, lot depth front yard, building height, building coverage, and maximum impervious coverage.

Additional requirements are in place for required side yard. Per §185 Attachment 9, Note 14, the 10-foot side setback is required on one side of the lot; if lot abuts a residential district, a 20-foot setback is required on the abutting side. The lot abuts a residential district to the south only. Ten-foot and 25-foot side yards are provided on the shared lot lines with #244 East Central Street. A 6.16' setback is provided along the westerly property line.

PARKING, LOADING AND DRIVEWAY REQUIREMENTS (§185-21)

Refer to Traffic Assessment section below.

SIDEWALKS (§185-28) AND CURBING (§185-29)

The project is located within the Commercial I Zoning district and is thus subject to §185-28. An existing sidewalk is present along East Central Street and the project proposes to reconstruct the portions of the sidewalk that will be impacted by the new driveway entrance. No sidewalk is proposed along Lewis Street.

Proposed curbing includes vertical granite curb at the East Central Street driveway entrance, Cape Cod Berm along Lewis Street, and precast concrete curb around parking areas and along sidewalks within the Site.

Z3. Depict existing and proposed sidewalk width on the plans. The sidewalk along the frontage must be at least 6 feet in width. BETA defers to the Town if a smaller width may be appropriate to match the existing sidewalk, if needed (§185-28).

MPD: V-101 Existing Conditions and C-102 Layout and Materials Plan have been updated to include the width of the sidewalks. The sidewalk to the right of the entrance where the proposed sidewalk transitions into the existing sidewalk is 5.4' and the proposed sidewalk is 5'.

BETA2: BETA recommends matching the width of the existing sidewalk within the right-of-way and defers this matter to the Board.

25. *BETA defers to the Town whether vertical granite curb should be provided at the Lewis Street driveway egress (§185-29) and notes that the existing edge treatment along the roadway is Cape Cod berm.*

MPD: Plans will be updated to reflect the decision of the Town of Franklin.

BETA2: BETA defers this issue to the Planning Board.

BETA5: Plan revised to provide granite curbing within the right-of-way, as requested by the Town Engineer. Issue resolved.

SITE PLAN AND DESIGN REVIEW (§185-31)

The project has been submitted for Site Plan Review and is required to conform to the requirements of this section. The submission is in compliance with this section except as noted below:

LANDSCAPING AND SCREENING (§185-35)

Refer to Landscape and Grading section below.

WATER RESOURCES DISTRICT (§185-40)

The Site is located within the Town of Franklin Water Resources District and a Zone II Wellhead Protection Area. The project does not include any use that would be prohibited in this district. Refer to the Stormwater Management section below relating to proposed artificial recharge for impervious areas.

INCLUSIONARY ZONING (§185-51)

The project proposes a multifamily development with 10 or more housing units and is therefore required to address affordable housing requirements (§185-51.C.(1)).

5.0 TRAFFIC ASSESSMENT AND IMPACT

The project is anticipated to generate an increase in daily trips compared to existing conditions due to the proposed multifamily housing and commercial uses. Refer to Trip Generation section below.

SITE ACCESS AND CIRCULATION

Access to the Site is proposed via a new curb cut and driveway entrance connecting to East Central Street in the north. The existing residential driveway in this area will be removed. The proposed entrance will connect to a one-way driveway continuing south through the Site and then east towards Lewis Street. A new driveway egress is proposed connecting to Lewis Street in the southeast corner of the Site.

The proposed driveway will connect to a small parking area in the northwest as well as a series of residential garages for the western building. A sidewalk is proposed along the east side of the driveway and will connect to the sidewalk along East Central Street.

Access to residential garages for the eastern building will be provided via four new residential driveways connecting directly to Lewis Street to the east. The existing residential driveway along Lewis Street will be removed.

- T2. *Confirm that the proposed configuration has been reviewed by the Town Fire Department.*

MPD: Noted

BETA2: BETA will defer this to the Board.

- T3. *Confirm there is adequate maneuvering space for vehicles to exit the garages (20' driveway aisle) and adequate turning radius for the largest vehicle anticipated on site, such as a waste collection or delivery.*

MPD: A vehicle turning analysis was completed and residential vehicles can exit all garages safely and both a pumper truck and garbage truck have adequate turning radius to safely maneuver on the site.

BETA2: BETA recommends that the garage space be shown for this analysis and that the results of the analysis be shown on the plans.

MPD Response: The garage space has been included on sheet C-107 Turning Analysis Plan.

BETA3: The aisle width between buildings has been widened to 27.0' in most locations, which is adequate for traffic turning in and out of the garage spaces. However, for Units 1 & 2, the aisle width will remain at 20'. Provide turning movements to demonstrate that vehicles can enter and exit these 2 garages within the limits imposed by the curbing opposite the garage entrance.

MPD3: The garage space has been included on sheet C-107 and C-108 Turning Analysis Plan.

BETA4: The paths overlap inside the garage so it will likely take multiple movements to enter and exit these 2 garages. BETA will defer this to the Board.

PARKING AND LOADING

Required parking is defined by §185-21.B of the Town Zoning Bylaw. The proposed development includes residential and nonresidential uses in the Commercial I zoning district. Required parking is calculated as follows:

Use Designation	Criteria	# of Units / Building Area	Required Parking
Residential	1.5 spaces per residential unit	14 units	21 Spaces
Nonresidential	1 Space per 500 Sq. Ft. of gross floor area	406 Sq. Ft.	1 Spaces
Total			22 Spaces

The project proposes three (3) outdoor parking spaces and fourteen (14) garages. Based on the parking requirement table provided by the Applicant, each garage is intended to provided two parking spaces for a total of twenty-eight (28) residential parking spaces required.,

One (1) of the outdoor parking spaces is designed to be van accessible in accordance with 521 CMR 23.2.1

The one-way driveway is a minimum of 20-feet wide, increased to 30'± adjacent to the outdoor parking area. Commercial parking spaces are 9 feet wide; and 19 feet long. Residential driveways and garages are designated as 20.7' wide for driveways serving single units and 41.4' wide for driveways serving multiple units.

- T4. *Indicate location of door for commercial area and confirm there is adequate space for opening and maneuvering in accordance with applicable ADA regulations.*

MPD: The location of the entrance to the commercial area has been added to C-102 Layout and Materials Plan and the building department will determine ADA regulation applicability.

BETA2: Information provided. BETA recommends ADA applicability to be coordinated with the Building Commissioner during the design phase.

TRIP GENERATION

Project-generated site traffic volumes were determined by utilizing trip-generation statistics published by the Institute of Transportation Engineers (ITE) for land use codes (LUC) 215 (Single-Family Attached Housing), and 822 (Strip Retail Plaza [<40k]). In addition, the existing single family land use LUC 210 (Single-Family Detached Housing) and LUC 215 (Single-Family Attached Housing) site trips were estimated for the existing residences that will be removed as part of this project. It is notable that the day care housed in one of the buildings to be demolished was not considered for this analysis. The chosen land use codes are appropriate for the project based on the types of units that will be constructed and demolished. The anticipated loss and generation of traffic volumes was estimated for both Weekday and AM/PM Peak Hour of Adjacent Street Traffic timeframes. A combination of fitted curve and average rate calculated trip ends have been used based on factors including number of data points, standard deviation, etc.

The existing site trips were calculated to be a total of 30 trips on an average weekday, two during the weekday morning peak hour, and two during the weekday afternoon peak hour.

The project site development is estimated to generate a total of 78 new trips on an average weekday with three during the weekday morning peak hour, and seven during the weekday afternoon peak hour.

With the existing site deducted from the overall proposed trips the new net trips generated by the project site are 48 new trips on an average weekday with one during the weekday morning peak hour, and five during the weekday afternoon peak hour.

For LUC 210 and LUC 215 there is a limitation with the ITE trip generation data when using an input value of one and two units. The minimum input value is ten and eight units, respectively. This limitation creates higher trips generated than expected. **Due to this limitation, BETA would typically request empirical data for a similar type of land use, however, the proposed AM and PM peak trip generated data for the proposed site are minimal, even without the existing trip generation volume reduction. Therefore, based on the provided proposed trip generation information, this project would overall have minimal traffic impact on the surrounding roadways.**

6.0 SIGNAGE AND LIGHTING

The project proposes two “visitor parking” signs at the northwest parking area. The project also proposes one accessible parking sign, a “one-way” sign, and a “do not enter” sign. All signs are anticipated to be appropriate for their use.

There is no indication in the planset that lighting is provided. The Illuminating Engineers Society of North America (IESNA) recommends the following illuminance for parking lots:

Level	Horizontal Illuminance (Min)	Vertical Illuminance (Min.)	Uniformity Ratio (Max/Min)
Basic Maintained Illuminance	0.2	0.1	20/1
Enhanced Security Illuminance	0.5	0.25	15/1

SL2. Clarify if site lighting is proposed. BETA recommends that lighting be provided to promote visitor and resident safety.

MPD: Scone lighting will be used to reduce potential disruption for abutting properties. A finalized lighting and photometric plan will be provided and added to the plan set at a later date.

BETA2: Lighting information will be reviewed upon receipt.

BETA3: A lighting photometric plan has been submitted, which proposes to use a combination of pole and wall mounted lighting. BETA has the following comments.

- Lighting levels are only projected to the property lines and spillage is anticipated onto 230 and 244 East Central Street and 29 Lewis Street.
- The two lights at the Lewis Street entrance are in the sewer easement (directly over the sewer line) and should be relocated outside the easement.
- Mounting heights and any proposed use of cutoffs/shielding for pole mounted luminaires should be clearly identified on the plans.

In accordance with the comments above BETA recommends that the lighting be modified to eliminate any light projection beyond the property limits.

MPD2: C-106 Photometric Plan revised to address comments.

BETA4: There is some spillage onto East Central Street and Lewis Street. The spillage onto East Central Street is more significant but is anticipated to be less than a typical streetlight. In addition, there is some spillage (0.1 fc) onto the residences at 244 East Central Street and the lot area at 29 Lewis Street. A waiver is needed for each of these locations where the light extends beyond the property line.

MPD4: C-106 Photometric Plan revised to address comments

BETA5: The fixtures have been modified to eliminate the spillage on the abutting lots. The spillage onto East Central Street remains. A waiver should be requested.

7.0 UTILITIES

Proposed utilities depicted on the plans include domestic water, fire service, sanitary sewer, electric service, and gas service.

Domestic water is proposed via new 2" copper type K and fire service is provided via new 4" CLDI. These services will connect to the existing main at East Central Street for Building "B" or the existing main at Lewis Street for Building "A". Additionally, new hydrants are proposed in the northeast and southeast corners of the Site.

Sanitary sewer service is proposed via new 6" PVC service. This service will connect to the existing main along the southern portion of the Site for Building "B" or the existing main at Lewis Street for Building "A".

Natural gas is proposed via a new service which will connect both buildings to the existing service at Lewis Street.

Electric service is proposed via new overhead line which will connect the Building "B" to an existing utility pole along East Central Street and Building "A" to an existing utility pole along Lewis Street.

- U4. *Evaluate layout of fire protection service and route directly to sprinkler room, if required. MPD: The sprinkler room and water service to it is found on sheet C-102 Layout and Materials Plan by Unit 14 in Building "A".*

BETA2: Utility layout identified on Sheet C-104 for Building A only. BETA will defer this issue to the Fire Department.

8.0 LANDSCAPE TREATMENT & GRADING

A landscaping plan has been provided depicting 75 shrub plantings and 2 tree plantings. Landscaping is generally proposed along the sidewalk, at the eastern driveways, and north of the outdoor parking area.

The project is not required to provide screening under §185-35.

Information on proposed seed mix for landscaping areas has not been provided.

- LA3. *Review grading in the northwest parking area. Based on the proposed spot grades and CB rim elevation this area is virtually flat and ponding/icing may result.*

MPD: Grading was reviewed to ensure positive grading and drainage in the northwest parking area.

BETA2: Based upon the spot grades shown on sheet C-103, the slope across the northwest parking lot is only 0.08% from the edge of the sidewalk to the catch basin. In addition, based upon the slope across the site BETA recommends that the garage locations including slab elevations be identified to show how they will relate to the proposed gutter line. Currently the proposed 283 & 284 contours between the buildings are each incorrect. Once garage slab elevations are identified, BETA also recommends that the first-floor elevations for each of the units be revisited.

MPD2: The slope across the northwest parking lot has been regraded at 2%.

BETA3: The First-Floor elevation identified on Sheet C-103 indicates that the Building A units will be 9" lower than the proposed garage slab, which is 6" below the adjacent driveway pavement. No First-Floor Elevation is indicated for Building B units. BETA recommends that the designer revisit these elevations.

MPD3: Elevation on sheet C-103 Grading Plan corrected.

BETA4: First Floor Elevations indicated at Elevation 285.50 which is 6" above garage slab. Issue resolved. Correct first floor elevations on Sheet C106 from 285.0 -285.5, and all building elevations on sheets C107 & 108.

MPD4: Elevations corrected on the above sheets

BETA5: Comments addressed.

- LA4. *Indicate if any dumpsters or waste collection and disposal measures are proposed.*

MPD: There is no dumpster or waste collection because trash removal will be private collection.

BETA2: Comment remains. Explanation does not answer the issue of waste collection. If the waste collection is private collection than demonstrate pick up methodology since driveway is one way.

MPD2: A turning analysis showing garbage collection path using a garbage truck has been added to the plan set as sheet C-107 Turning Analysis Plan. Garbage will be collected at the end of each driveway at a discussed frequency.

BETA3: Turning movements have been provided that demonstrate the waste collection vehicle can navigate through the site and the waste collection vehicle is identified as “rear-load.” BETA anticipates that waste receptacles will need to be placed in front of garages or doorways and there may be some impact to typical vehicle operations on waste collection days. Waste collection locations should be identified for Unit 1 and the commercial unit where the driveway width is limited to 20 feet.

MPD3: Trash collection is organized through a private company with smaller trucks with the ability to navigate through the driveway. Trash bins will be located on the recess area next to the garage, not blocking driveway. The trash bin for the commercial space can be placed on the west side of the building while awaits trash collection. Not blocking pedestrian movement or car maneuverability.

BETA4: It appears that trash receptacles will always be visible. The receptacles for the commercial space will be visible from East Central Street. BETA recommends that the design consider some means of screening these receptacles from view during off collection days and defers this issue to the Board.

MPD4: 48”x48” area with screening fence added adjacent to commercial area for trash receptacles.

BETA5: Comment addressed.

9.0 STORMWATER MANAGEMENT

The proposed stormwater management design consists of five subsurface infiltration systems located throughout the Site. The largest system is located beneath the central driveway and four smaller systems are proposed on the eastern side of the Site. Stormwater runoff will be conveyed to the systems via a closed drainage system consisting of catch basins, manholes, “pretreatment” manholes, and roof leaders. The proposed design will rout stormwater runoff from Building B, a portion of Building A, and the central driveway to the larger system and stormwater runoff from the remainder of Building A and the residential driveways to the smaller systems. No means of conveying overflow has been incorporated into the system and thus in the event of overflow it is expected that the catch basins will surcharge and flood the immediate vicinity.

GENERAL

STORMWATER MANAGEMENT REGULATIONS (CHAPTER 153)

The project proposes to disturb less than one acre within the Town of Franklin. It is therefore not subject to the Town of Franklin Stormwater Management Regulations.

MASSDEP REPORTABLE RELEASES

The MassDEP Waste Site / Reportable Release database identifies the abutting lot 244 East Central Street as the location of a reportable release under Release Tracking Number (RTN) 2-0016890. This MassDEP listed site adjoins the 240 East Central Street property. Available documentation indicates that the release originated from a crack in a copper line for an above-ground storage tank (AST) resulting in a release of #2 heating oil resulting in soil and groundwater impacts including the presence of light non-aqueous phase liquid (LNAPL) free project layer. Immediate Response Actions were conducted to remove impacted soil

from the basement and install a polyethylene barrier around the release area. Further response actions included additional soil removal and subsurface investigations. The RTN has since been closed.

MASSDEP STORMWATER STANDARDS

The project proposes to disturb less than one acre of land within the Town of Franklin and is not in proximity to wetland resources. Therefore, the project is only subject to Chapter 153 and the Massachusetts Stormwater Standards to the extent requested by the Board (185-31.C.(3)(m)). The following sections are provided for the Boards consideration. BETA notes that the Applicant has documented compliance with the MA Stormwater Standards in the Stormwater Management Report.

LOW IMPACT DEVELOPMENT (LID) TECHNIQUES

Proposed LID measures include no disturbance to any wetland resource area.

NO UNTREATED STORMWATER (STANDARD NUMBER 1): *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.* The project does not propose any new discharges to wetlands - **complies with standard.**

SW3. *Indicate anticipated route for stormwater in the event of system overflow.*

MPD: Response: In the event of system overflow, the flow will be diverted back to the inlet pipe and discharge at the overflow located below the gutters or will surcharge the upstream catch basin.

BETA2: It appears that Unit Nos. 8 & 14 may be flooded if the system overflows. BETA recommends that the overall grading be modified to ensure that the Lewis Street driveway entrance will act as the final overflow.

MPD2: *Discussed with BETA.*

BETA3: See Comment LA3 above. In addition, review Building B to determine if any impacts to drainage patterns from the adjacent site will be impacted/blocked. In conjunction with comment SW8 below, BETA recommends that the design identify how runoff from the west of the building will be collected and directed east around the building.

MPD3: *We propose an infiltration trench drain along the entire property to collect all water runoff on the west side of the building, addressing runoff from not only our property but also any impact from the adjacent property.*

BETA4: BETA offers the following comments on the design of the infiltration trench:

- a. There are no design elevations identified and the trench is wrapped with a filter fabric which prevent fines from coming into the trench but will also become impermeable over time.
- b. Runoff will have to penetrate 6" of topsoil to enter the trench. During frozen ground conditions this will not be possible.

BETA recommends that the design provide some means of runoff collection through area drains which can then be directed into the trench through perforated piping. The proposed width of the trench as indicated on Sheet C-104 is only 12" wide. Thus, storage capability will be limited to 111 cu. ft. with an exfiltration rate of only 0.017 cfs. BETA recommends that the width be increased to 24", which would effectively double the storage volume and exfiltration rate.

MPD4: The infiltration trench is now a trench drain, elevations have been added to the utilities plan.

BETA5: Comment addressed.

POST-DEVELOPMENT PEAK DISCHARGE RATES (STANDARD NUMBER 2): *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. The project proposes to mitigate increases to runoff rates with the use of subsurface infiltration systems. Calculations indicate a decrease in peak discharge rate and peak runoff volume to all points of analysis.*

SW4. *Separate DP-1 into two analysis points: one for the East Central Street drainage system and one for the abutting property to the west.*

MPD: DP-1 was already divided to capture the changes associated with the new development.

BETA2: Comment remains, DP-1 is only one watershed and has not been divided. In addition, explain how runoff from the west side of Building will travel around Building B.

MPD2: DP-1 has been divided into 2 areas, there are now 4 design points. Runoff from the west side of building B now discharges to DP-4.

BETA3: Comment remains. The calculations dated 06/12/2024 do not show DP-4.

MPD3: Drainage basin DP-1 stay the same. We added the infiltration trench drain to collect water runoff on the west side of the building. Any overflow will be directed to the drainage basin on the center of the driveway.

BETA4: See SW8 below

SW8. *Review HydroCAD model for subcatchment P-2:*

- a. *Confirm areas attributed to grass and paved parking.*
- b. *Revise time of concentration calculation to reflect the post-development site layout.* MPD: Grass and paved areas have been confirmed and the time of concentration has been updated.

BETA2: Comment remains. There are no paved roads discharging towards DP P-3. The Tc calculation has not been corrected either. The maximum sheet flow length should be 50'. BETA recommends that the flow paths be identified on the watershed plans which support the calculations.

MPD2: Maximum sheet flow length is now 50'. The Tc has been updated to show pipe flow after the shallow concentrated flow condition.

BETA3: The Tc for watershed P-2 has been modified to a 6.0 minute minimum. However, the Tc calculation for watershed P-1 continues to show a 358' travel distance. As requested, the flow paths should be identified on the watershed plans which support the calculations. This also applies to the Existing Conditions analysis. The Tc for watersheds E-2&3 have been assumed as the minimum of 6.0 minutes. The flow path shown on the watershed plans for watershed E-2 is greater than 300' which would normally result in a Tc greater than 6.0 minutes. BETA recommends that the designer review the existing conditions watershed delineation and travel paths.

MPD3: Comment addressed Hydrologic report revised.

BETA4: Updated analysis provided; however, additional recommended modifications are as follows.

1. The Tc calculation for E-2 does not appear correct. Based upon the plans the grade for over 220' is negligible. In addition, the Tc should be calculated for all existing conditions watersheds rather than using an assumed minimum of 6.0 minutes. If calculations show less than 6 minutes they may be rounded up to the minimum of 6 minutes.
2. The CN Values used in the HydroCAD analysis are all associated with HSG B; however, the test pit data indicates that the soils are HSG A (loamy sand). Revise the CN values to reflect the field verified conditions.
3. The flow into infiltration system #2 is limited to half the roof area of Building A. The lawn area between the building and Lewis Street should be routed separately and the delineations for watersheds should be updated.
4. Review existing topography on the subject site as it relates to the proposed/recently constructed grading on the adjacent 230 E. Central Street Site. It is anticipated that there may be no direct flow towards 230 East Central Street and that all runoff from the site will flow towards Lewis Street. Following review, the HydroCAD analysis may only require a single design point at the catch basin just north of the proposed exist from the site onto Lewis Street.
5. The HydroCAD analysis for the ponds has been modeled such that they show no discharge. Rather they stop the water surface elevation at 280. Based upon the calculations infiltration system No. 1 has reached capacity at the peak of the 25-year storm. Based upon this scenario, CB 3 will become the outlet and runoff will flow from the catch basin onto Lewis Street. The calculations should be modified to show the catch basin grate as the outlet and show what the flow rates should be expected from the driveway.

MPD4: The Tc calculation for E-2 has been corrected, and all other Tc calculations were confirmed, and 6 minutes was only used as a minimum Tc. All CN values were updated to reflect A soils. Infiltration system #2 is now only receiving half the roof area of the building. CB 3 is now the primary outlet for infiltration system #1.

BETA5: Comment addressed.

RECHARGE TO GROUNDWATER (STANDARD NUMBER 3): *Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable.*

NRCS soil maps indicate that soils are Sudbury fine sandy loam with a hydrologic soil group rating (HSGR) of B (moderate infiltration potential) or urban land with no assigned HSGR. The Applicant has conducted two soil tests at the Site indicating the subsurface soils are predominantly loamy sand over fine sand. Groundwater was not detected in test pits to the bottom depth of 8' below grade.

Groundwater recharge is proposed via five new subsurface infiltration systems. The project is expected to provide a recharge volume in excess of what is required. Calculations have been provided indicating all BMPs will drawdown within 72 hours.

- SW9. *Conduct test pits in the vicinity of the eastern subsurface systems to confirm suitability of this area for infiltration.*

MPD: Test pits were conducted on 5/22/24 in the footprint of the eastern stormwater system.

BETA2: Provide results of test pit information.

MPD2: Test Pit logs on sheet V-101 Existing Conditions have been logged and confirm the ESHWT to be at 13 feet below grade.

BETA3: The 3 test pits are not located in the location of the proposed easterly subsurface infiltration system along Lewis Street. In accordance with the handbook, a minimum of 2 soil observations are required at this location. Comment remains.

MPD3: The proper soil test location cannot be performed at this time. We propose to submit additional soil data after the demolition of the building is done and the site is clear. We are confident the soil types throughout the property are consistent with the soil encountered on locations where we excavated.

BETA4: BETA recommends for the designer to provide the Board with additional context on why the test pits cannot be performed during the design phase. If the Board elects to allow the additional test pits as a condition of approval BETA recommends they are performed within a specific timeline in the early stages of construction.

MPD4: Additional soil test performed. Test Pit 4, 5, 6 and 7 information added to the plans

BETA5: Test pits conducted that confirm design assumptions. Issue resolved.

- SW10. *Revise system bottoms for subsurface infiltration systems to provide at least 2' separation to groundwater. Test Pits 1 and 2 were completed to a depth of 8' below grade, or approximate elevation 275', while the system bottom elevation is 276.48'. As groundwater was not encountered, elevation 275' should be assumed to be the estimated seasonal high groundwater elevation. It is BETA's understanding that groundwater was encountered several feet below the system bottom on the adjacent 230 East Central Site during construction.*

MPD: Test pits were conducted in the footprint of the western stormwater system again to confirm ESHWT which was approximately 13' below grade.

BETA2: Provide updated test pit information. The test pit data shown on Sheet V-1 does not A setback of at least 10 feet from property lines and buildings for all SCMs is typically required per (MA Handbook V1C1 Pg 8). Coordinate with the DPW to determine if any impacts to the roadway subgrade will result from installation of the subsurface systems.

MPD: We will coordinate with the DPW to inquire about any impacts to the roadway with the subsurface systems.

BETA2: BETA will defer this issue to the DPW and notes the current setback is approximately 8 feet.

- SW13. *Confirm that the infiltration of stormwater in close proximity to building foundations will not impair the stability of the proposed buildings or #244 East Central Street. Consider providing an impermeable liner between the proposed infiltration system and the #244 property if necessary.*

MPD: According to MASSDEP Volume 2 Chapter 2 infiltration practices need to be at least 10' from building foundations.

BETA2: Comment remains. In accordance with Volume 1, Chapter 1 setbacks range from 10-100'. Since system for pond 12P is between the buildings an impermeable liner should be considered.

MPD2: Impermeable barrier has been added to both infiltration systems and can be seen on sheet C-103 Grading Plan.

BETA3: BETA recommends that the impermeable barrier extend to a depth below the foundation footings. Show the barrier on the detail on Sheet C-202 and clarify if geotextile will be proposed on the bottom of the system.

MPD3: Impermeable barrier added, and detail sheet revised.

BETA4: Detail revised to show impermeable barrier. Update detail to clarify if the designer will require the "optional non-woven geotextile" to be installed.

MPD4: Detail revised removing the "optional" wording from the detail.

BETA5: Comment addressed.

TOTAL SUSPENDED SOLIDS (STANDARD NUMBER 4): For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids (TSS).

The project includes the following treatment trains:

Treatment Train	SCM 1	SCM 2	Infiltration BMP	TSS Removal %
A	Deep Sump Catch Basin	Hydrodynamic Separator	Subsurface Infiltration System	80%
B	Deep Sump Catch Basin	None	Subsurface Infiltration System	80%

The project has been designed to provide at least 80% TSS removal for treated impervious areas. The proposed infiltration BMP has been sized to treat the required 1-inch water quality volume.

Per Standard 6, the project is required to provide at least 44% TSS removal as pretreatment. Pretreatment for the large system is provided via deep-sump catch basins and deep-sump manholes identified as "pretreatment manholes." Pretreatment for the smaller systems is provided via deep-sump catch basins and isolator row.

A Long Term Pollution Prevention Plan is included in the O&M Plan.

HIGHER POTENTIAL POLLUTANT LOADS (STANDARD NUMBER 5): Stormwater discharges from Land Uses with Higher Potential Pollutant Loads (LUHPPLs) require the use of specific stormwater management BMPs.

The project includes residential and commercial uses which are not typically considered LUHPPLs – **standard not applicable.**

CRITICAL AREAS (STANDARD NUMBER 6): Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas.

A portion of the site is located within a MassDEP mapped wellhead protection area – Zone II which is a critical area. The project is required to treat the 1-inch water quality volume and provide at least 44% pretreatment for infiltration SCMs. Subsurface structures are considered suitable SCMs for use in Zone II wellhead protection areas.

REDEVELOPMENT (STANDARD NUMBER 7): *Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable.*

The project does not qualify as a redevelopment – **standard not applicable.**

EROSION AND SEDIMENT CONTROLS (STANDARD NUMBER 8): *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.* As the project proposes to disturb less than one acre of land, it will not be required to file a Notice of Intent with EPA nor develop a Stormwater Pollution Prevention Plan (SWPPP). An erosion control plan has been provided showing inlet protection, linear sedimentation control (compost filter sock), and designated stockpile locations with perimeter controls. A basic construction sequence is outlined on the plans.

OPERATIONS/MAINTENANCE PLAN (STANDARD NUMBER 9): *A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed.* A Stormwater Operation and Maintenance Manual was provided with the Stormwater Management Report.

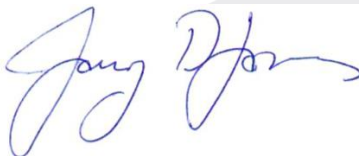
ILLICIT DISCHARGES (STANDARD NUMBER 10): *All illicit discharges to the stormwater management system are prohibited.* A signed Illicit Discharge Compliance Statement was provided with the submission.

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,
BETA Group, Inc.



Matthew J. Crowley, PE
Senior Project Manager



Gary D. James
Senior Project Manager